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Waste Site Reclassification Form

Date Submitted: 06/14/04	**Operable Unit(s):** 100-KR-2	**Control Number:** 2004-040
Originator: R. A. Carlson	**Waste Site ID:** 100-K-29	**Lead Agency:** EPA
Phone: 373-9759	**Type of Reclassification Action:** Rejected ☐ Closed Out ☐ Interim Closed Out ☒ No Action ☐	RECEIVED JUL 08 2004 EDMC

This form documents agreement among the parties listed below authorizing classification of the subject unit as rejected, closed out, interim closed out, or no action and authorizing backfill of the site, if appropriate. Final removal from the National Priorities List of no action, interim closed out, or closed-out sites will occur at a future date.

Description of current waste site condition:

The 100-K-29 site is located within the 100-KR-2 Operable Unit in the 100-K Area of the Hanford Site. In the early 1980s, steel components from the 183-KE settling basins were sandblasted at this site prior to being sold as scrap. The site consists of surface gravel/cobble and red/purple garnet. Sampling and evaluation of this site have been performed in accordance with remedial action objectives and goals established by the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington* (Remaining Sites ROD). The selected action involved (1) sampling the site, (2) cleaning up the site, (3) demonstrating through a combination of field screening and verification sampling that cleanup goals have been met, and (4) proposal for interim close out.

Basis for reclassification:

The 100-K-29, 183-KE Sandblasting site meets the remedial action objectives as specified in the Remaining Sites ROD, U.S. Environmental Protection Agency, Region 10, Seattle, Washington. The results demonstrated that residual contaminant concentrations support future unrestricted land uses that can be represented (or bounded) by a rural-residential scenario. These results also showed that residual concentration supports unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]), and that contaminant levels remaining in the soil are protective of groundwater and the Columbia River. This site is not a deep zone site (i.e., below 4.6 m [15 ft]); therefore, deep zone institutional controls are not required. The basis for reclassification is described in detail in the *Remaining Sites Verification Package for 100-K-29, 183-KE Sandblasting Site* (attached).

J. Zeisloft DOE-RL Project Lead	Signature	6/21/04 Date
NA Ecology Project Manager	Signature	Date
L. E. Gadbois EPA Project Manager	Signature	6-24-04 Date

REMAINING SITES VERIFICATION PACKAGE FOR 100-K-29, 183-KE SANDBLASTING SITE

Attachment to Waste Site Reclassification Form 2004-040

June 2004

REMAINING SITES VERIFICATION PACKAGE FOR 100-K-29, 183-KE SANDBLASTING SITE

EXECUTIVE SUMMARY

The 100-K-29, 183-KE Sandblasting site is located within the 100-KR-2 Operable Unit in the 100-K Area of the Hanford Site. The site consisted of visible red/purple garnet sandblasting material on the surface, located most heavily in three general areas. A phased sampling approach (to determine if remediation is necessary) was implemented on a systematic grid, with focused/judgmental sampling based on visual site evaluation of potential contamination areas. The sampling strategy was based on site photographs, historical sandblasting use information, and suspected waste materials.

Confirmatory sampling was conducted during April 2003 at the three general areas with sandblasting materials. Hexavalent chromium was detected at concentrations of up to 8.4 mg/kg, total chromium was detected at concentrations of up to 26.1 mg/kg, lead was detected at concentrations of up to 115 mg/kg, and polychlorinated biphenyls (Aroclor-1254) were detected at concentrations of up to 0.24 mg/kg. These concentrations exceeded action levels, indicating that site remediation was required.

A cleanup action was implemented during December 2003, removing the sand blast media and about 5.1 cm (2 in.) of contaminated soil from the 100-K-29 site. Excavated sand blast media and soil were disposed of at the Environmental Restoration Disposal Facility.

Following remediation, verification sampling was conducted during December 2003. The results indicated that the cleanup action achieved compliance with the remedial action objectives (RAOs) for the 100-K-29 site. A summary of the cleanup evaluation for the soil results against the applicable criteria is presented in Table ES-1. The results of the evaluation of the cleanup verification sample data were used to support reclassification of the waste site in accordance with the Waste Site Reclassification Guideline TPA-MP-14 (DOE-RL 1998).

The current site conditions achieve the RAOs and the corresponding RAGs established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE-RL 2004b) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units* (EPA 1999). These results also show that residual soil concentrations support future land uses that can be represented (or bounded) by a rural-residential scenario, and that contaminant levels remaining in the soil are protective of groundwater and the Columbia River. The site is not a deep zone site (i.e., below 4.6 m [15 ft]); therefore, deep zone institutional controls are not required.

Table ES-1. Summary of Remedial Action Objectives for the 100-K-29 Site.

Regulatory Requirement	Remedial Action Goals	Results	Remedial Action Objectives Attained?
Direct Exposure – Radionuclides	Attain 15-mrem/yr dose rate above background over 1,000 years.	There are no radionuclide COPCs for this site.	Not applicable
Direct Exposure – Nonradionuclides	Attain individual COPC RAGs.	All individual COPC concentrations are below the direct exposure criteria.	Yes
Risk Requirements – Nonradionuclides	Hazard quotient of <1 for all individual noncarcinogens.	The post-remediation maximum concentrations of the COCs achieved the individual and cumulative risk RAGs.	Yes
	Cumulative hazard quotient of <1 for noncarcinogens.		
	Excess cancer risk of $<1 \times 10^{-6}$ for individual carcinogens.		
	Cumulative excess cancer risk of $<1 \times 10^{-5}$ for carcinogens.		
Groundwater/River Protection – Radionuclides	Attain single-COPC groundwater and river protection RAGs.	There are no radionuclide COPCs for this site.	Not applicable
	Attain national primary drinking water standards:[a] 4 mrem/yr (beta/gamma) dose rate to target receptor/organs.		
	Meet drinking water standards for alpha emitters: the most stringent of 15 pCi/L MCL or 1/25th of the derived concentration guides from DOE Order 5400.5.[b]		
	Meet total uranium standard of 21.2 pCi/L.[c]		
Groundwater/River Protection – Nonradionuclides	Attain individual nonradionuclide groundwater and river cleanup requirements.	Maximum detected results for chromium (total), lead, and Aroclor-1254 are above groundwater and river RAGs. However, RESRAD modeling results indicate that they will not reach groundwater (and, therefore, the Columbia River) within 1,000 years. Therefore, their residual concentrations achieve the RAOs for groundwater and river protection.	Yes

[a] "National Primary Drinking Water Regulations" (40 *Code of Federal Regulations* 141).
[b] *Radiation Protection of the Public and the Environment* (DOE Order 5400.5).
[c] Based on the isotopic distribution of uranium in the 100 Areas, the 30 µg/L MCL corresponds to 21.2 pCi/L. Concentration-to-activity calculations are documented in *Calculation of Total Uranium Activity Corresponding to a Maximum Contaminant Level for Total Uranium of 30 Micrograms per Liter in Groundwater* (BHI 2001).

COPC = contaminant of potential concern
DOE = U.S. Department of Energy
MCL = maximum contaminant level
RAG = remedial action goal
RAO = remedial action objective
RESRAD = RESidual RADioactivity (dose model)

REMAINING SITES VERIFICATION PACKAGE FOR 100-K-29, 183-KE SANDBLASTING SITE

STATEMENT OF PROTECTIVENESS

The 100-K-29, 183-KE Sandblasting site sample results demonstrates that the site meets the objectives for interim closure as established in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2004b) and the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units* (commonly called the Remaining Sites Record of Decision) (EPA 1999). Evaluation of sampling results from the 100-K-29 site demonstrate that residual site soil contaminant concentrations support future land uses that can be represented (or bounded) by a rural-residential scenario, and that contaminant levels remaining in the soil are protective of groundwater and the Columbia River. The site is not a deep zone site (i.e., below 4.6 m [15 ft]); therefore, deep zone institutional controls are not required.

GENERAL SITE INFORMATION AND BACKGROUND

The 100-K-29 sandblasting site is located within the 100-KR-2 Operable Unit in the 100-K Area of the Hanford Site. The site consists of surface gravel/cobble, and sandblasting media (red/purple garnet). The site is irregularly shaped and covers an area of 46 by 27 m (50 by 30 yd). The site was active in the early 1980s. The 100-K-29 Waste Information Data System (WIDS) summary report is presented in Appendix A.

CONFIRMATORY SAMPLING ACTIVITIES

Site Walkdown

A site walkdown was performed during April 2003, with the U.S. Department of Energy, Richland Operations Office, the lead regulatory agency (U.S. Environmental Protection Agency [EPA]), and the project team. The objective of the walkdown was to gather the necessary information to finalize the sampling requirements specified in the 100-K-29 waste site evaluation (BHI 2003c). The walkdown verified that the site had not changed from the description and photographs in WIDS. The ground surface was composed of gravel and cobble. There was visible sandblasting media (red/purple garnet) on the gravel in three locations, and some smaller areas with finer garnet particles because of wind deposition.

Contaminants of Potential Concern

The contaminants of potential concern (COPCs) for the 100-K-29 waste site were identified based on process knowledge regarding historical uses of sandblasting media and the RDR/RAWP (DOE-RL 2004b). The COPCs include arsenic, barium, cadmium, chromium (hexavalent and total), lead, mercury, selenium, silver, Aroclor-1254, and asbestos. There are no radiological COPCs for this site.

Confirmatory Sample Design

Confirmatory sampling was conducted at the 100-K-29 site during April 2003. The 100-K-29 site was stratified into three sample areas using the site boundaries established in WIDS, which are based on the visual presence of garnet material at the site. The Visual Sample Plan (PNNL 2002) was used to develop a systematic sampling grid over the surface of the two larger areas (Areas 2 and 3). Area 1 was sufficiently small in size to allow for spatial sampling without an established grid. Sample locations are shown in Figures 1 and 2.

Area 1: A small area with the thickest deposits of the garnet material. One sample of the garnet material (exclusive of soil) and one sample of the native soil directly below the garnet material were collected. The garnet material was sampled by collecting aliquots of garnet material, spatially distributed across the pile (laterally and vertically), until sufficient garnet material was obtained to provide a sample for laboratory analyses. The native soil below the garnet material was sampled at a depth of 15 to 20 cm (6 to 8 in.) below ground surface. The soil sample was collected by scraping the garnet material aside until the native soil was observed. The soil sample consisted of aliquots spatially distributed across the pile (laterally and vertically) and combined into one sample for analyses.

Area 2: Larger than Area 1, with a thinner distribution of garnet material across the surface of the soil. Area 2 was sampled by collecting 16 aliquots of soil/garnet media from the surface of the area using a systematic triangular grid. A duplicate soil/garnet media sample was also collected from this area. An aliquot consisting of the garnet/soil media at each of the 16 sample locations was collected from the surface to a depth of 7.6 cm (3 in.), and combined into one sample for laboratory analyses as shown in Figure 1.

Area 3 (Areas 3a and 3b): The largest of the three areas and, similar to Area 2, has a thinner distribution of garnet material across the surface of the soil than Area 1. Area 3 was divided into two subareas for sampling: Area 3a and Area 3b. Each subarea was sampled separately, with 16 aliquots of soil/garnet media collected from the surface to a depth of 7.6 cm (3 in.) using a systematic triangular grid. The 16 aliquots were then combined into one sample for laboratory analyses. This resulted in two samples for laboratory analyses, one from Area 3a and one from Area 3b, as shown in Figure 2.

Table 1 provides the confirmatory sampling summary.

Figure 1. Sample Locations at Area 2 of the 100-K-29 Site.

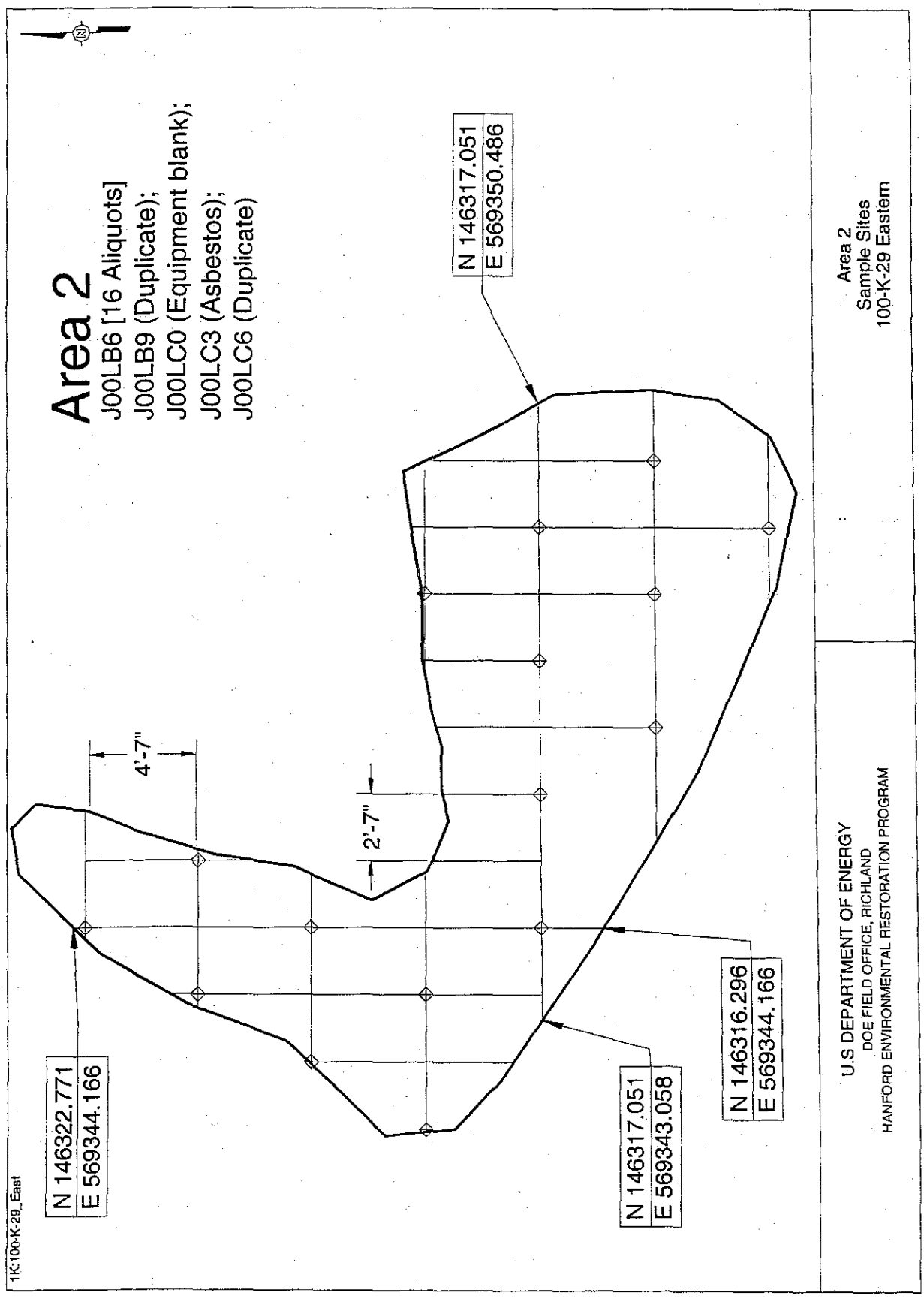

Figure 2. Sample Locations at Area 3a and 3b of the 100-K-29 Site.

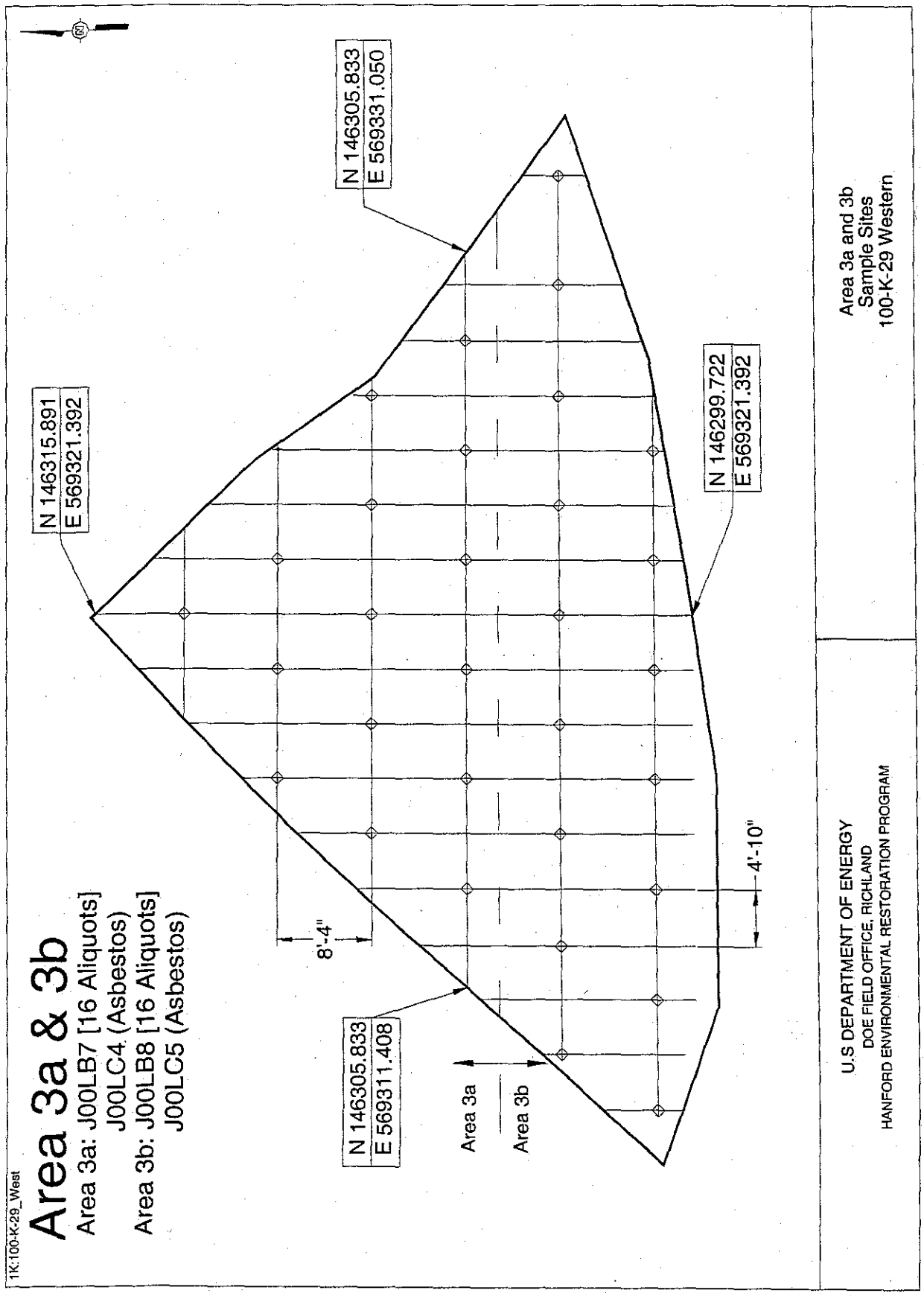

Table 1. Confirmatory Sample Summary for the 100-K-29 Site.[a]

Sample Location	Sample Media	HEIS Sample Number	Depth	Sample Analysis
Area 1	Garnet	J00LB4 J00LC1	Surface	J00LB4, J00LB5: As, Ba, Cd, Cr (hexavalent and total), Pb, Se, Ag, Hg, and PCBs. J00LC1, J00LC2: Asbestos.
	Native soil	J00LB5 J00LC2	6 to 8 in. bgs	
Area 2	Soil/garnet media	J00LB6 J00LC3	Surface	J00LB6: As, Ba, Cd, Cr (hexavalent and total), Pb, Se, Ag, Hg, and PCBs. J00LC3: Asbestos.
Area 3a	Soil/garnet media	J00LB7 J00LC4	Surface	J00LB7: As, Ba, Cd, Cr (hexavalent and total), Pb, Se, Ag, Hg, and PCBs. J00LC4: Asbestos.
Area 3b	Soil/garnet media	J00LB8 J00LC5	Surface	J00LB8: As, Ba, Cd, Cr (hexavalent and total), and PCBs. J00LC5: Asbestos.
Additional Quality Control Samples				
Duplicate	Soil/garnet media	J00LB9 J00LC6	Surface	J00LB9: As, Ba, Cd, Cr (hexavalent and total), Pb, Se, Ag, Hg, and PCBs. J00LC6: Asbestos.
Equipment blank	Silica sand	J00LC0	NA	As, Ba, Cd, Cr (total), Pb, Se, Ag, and Hg.

[a] Logbook (Bowers 2003).
bgs = below ground surface
HEIS = Hanford Environmental Information System
NA = not applicable
PCB = polychlorinated biphenyl

Confirmatory Sample Results

Confirmatory garnet and soil samples were analyzed using EPA-approved analytical methods. The results are stored in the Environmental Restoration (ENRE) Project-Specific Database prior to archiving in the Hanford Environmental Information System (HEIS) and are included in Appendix B (Table B-1).

Soil surface samples were taken from four locations. Samples were also taken from garnet areas. With the exception of hexavalent chromium, total chromium, lead, and Aroclor-1254, the maximum detected results for all COPCs were less than applicable remedial action goals (RAGs). The maximum confirmatory sampling results for hexavalent chromium (8.4 mg/kg) exceeded the direct exposure, groundwater, and river protection RAGs (2.1, 8, and 2 mg/kg, respectively); the maximum detected results of total chromium (26.1 mg/kg) exceeded the groundwater and river protection RAGs (18.5 mg/kg); the maximum detected results for lead (115 mg/kg) exceeded the groundwater and river protection RAGs (10.2 mg/kg); and the maximum detected results for Aroclor-1254 (0.240 mg/kg) exceeded the groundwater and river protection RAGs (0.017 mg/kg). Therefore, based on these maximum results, the site was recommended for remedial action.

REMEDIAL ACTION SUMMARY

The remove, treat, and dispose decision for the 100-K-29 site was supported by the site confirmatory sample results. The analytical laboratory results for hexavalent chromium, total chromium, lead, and Aroclor-1254 exceeded action levels, indicating that site remediation (remove, treat, and dispose) was required. A cleanup action was implemented during December 2003, removing 187 metric tons (206 tons) of sandblast media and underlying soil and disposing of it at the Environmental Restoration Disposal Facility. The remediation activity excavated about 5.1 cm (2 in.) of soil from the 100-K-29 site at the deepest location.

VERIFICATION SAMPLING ACTIVITIES

Contaminants of Concern

The contaminants of concern (COCs) for the remedial action of the 100-K-29 waste site were identified based on the results of the confirmatory sampling effort. Arsenic, barium, cadmium, mercury, selenium, silver, and asbestos were excluded from the verification sampling analyte list based on their low concentrations from the confirmatory sampling results. The COCs included in verification sampling were total chromium, lead, hexavalent chromium, and polychlorinated biphenyls (PCBs) (Aroclor-1254).

Verification Sample Design

Following remediation, verification sampling was conducted at the 100-K-29 site during December 2003. These soil samples were collected following the same methods and locations as the confirmatory soil sampling events. Three samples were collected from Areas 2, 3a, and 3b (samples J015N8, J015N9, and J015P0). Area 1 was not sampled again because all COPCs identified for confirmatory sampling analysis met the RAGs. The soil samples consisted of the native soil at the bottom of the excavated area that represented a soil horizon of about 5.1 cm (2 in.) below the ground surface. Table 2 provides the verification sampling summary.

Table 2. Verification Sample Summary Table.[a]

Sample Location	Sample Media	HEIS Sample Number	Sample Analysis
Area 2	Soil	J015N8	Cr (total and hexavalent), Pb, and PCBs.
Area 3a	Soil	J015N9	Cr (total and hexavalent), Pb, and PCBs.
Area 3b	Soil	J015P0	Cr (total and hexavalent), Pb, and PCBs.

[a] Logbook (Fahlberg 2003).

Verification Sampling Results

The samples were analyzed using EPA-approved analytical methods. A comparison of the maximum detected COC results and the site RAGs are summarized in Table 3. Contaminants that were not detected above practical quantitation limits or minimum detectable activities are excluded from

Table 3. The verification sample results are stored in the ENRE Project-Specific Database prior to archiving in HEIS and are included in Appendix B (Table B-2).

Table 3. Comparison of Maximum Soil Values to Action Levels.

COPC/COC	Maximum Result (mg/kg)		Soil Concentration RAGs (mg/kg)			Does the Maximum Result Meet the RAGs?	
	Confirmatory Results	Verification Results	Direct Exposure	Groundwater Protection	River Protection	Confirmatory Results	Verification Results
Arsenic	2.3 (<BG)	NA	20[a]	20[a]	20[a]	Yes	NA
Barium	66.4 (<BG)	NA	5,600	132[b]	--[c]	Yes	NA
Cadmium[d]	0.33 (<BG)	NA	13.9	0.81[b]	0.81[b]	Yes	NA
Chromium (total)	26.1	24.7	80,000	18.5[b]	18.5[b]	No	Yes[e]
Chromium (hexavalent)[f]	8.4	0.24	400[g] 2.1[h]	8	2	No	Yes
Lead	115	63.2	353[i]	10.2[b]	10.2[b]	No	Yes[e]
Mercury	0.05 (<BG)	NA	24	0.33[b]	0.33[b]	Yes	NA
Aroclor-1254	0.24	0.047	0.5	0.017[j]	0.017[j]	No	Yes[e]

[a] The cleanup value of 20 mg/kg has been agreed to by Tri-Party project managers.
[b] Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-700[4][d]).
[c] A river protection value cannot be calculated because there are no published surface water maximum contaminant level standards.
[d] Hanford Site specific background for cadmium is not available; background value is from Ecology (1994).
[e] The RESRAD model results (BHI 2004a) indicate that the COC does not reach groundwater or the river within 1,000 years.
[f] There is no Washington State or Hanford Site background value for hexavalent chromium.
[g] WAC 173-340-740(3) noncarcinogenic cleanup limit.
[h] WAC 173-340-750(3) carcinogenic cleanup limit based on the inhalation exposure pathway (see *Calculation of Hexavalent Chromium Carcinogenic Risk* [BHI 2000]).
[i] WAC 173-340-740(3) value for lead is not available. Cleanup value calculated using the *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children* (EPA 1994).
[j] Where cleanup levels are less than required detection limits (RDLs), cleanup levels default to RDLs (WAC 173-340-707[2]).
BG = background

DATA EVALUATION

All verification sample COCs are less than direct exposure RAGs; however, post-remediation residual levels of total chromium, lead, and Aroclor-1254 exceeded groundwater and river protection RAGs. Where COC concentrations exceed soil RAGs, RESRAD modeling was performed to provide an assessment of the potential impacts that these COCs pose to groundwater and the river. Based on the conservative assumption (outlined in DOE-RL [2004b]) that the upper vadose zone concentrations of these COCs extend uniformly to groundwater, RESRAD predicts that total chromium and Aroclor-1254 will achieve groundwater and river protection, while lead will exceed the drinking water standard. Because this approach is overly conservative, the lead contaminant-depth distribution from the 100-K-33 test pit (BHI 2004d) was used in a RESRAD modeling effort (BHI 2004b) to establish the lower vadose zone concentration of lead at the 100-K-29 site. The RESRAD modeling results indicate that the residual concentrations of these COCs will not impact groundwater or the river within 1,000 years and are, therefore, protective.

COC carcinogenic risk of less than 1×10^{-5}. For the 100-K-29 site, these risk calculations were conservatively calculated using maximum residual COC soil concentrations after site remediation. Arsenic, barium, cadmium, and mercury were not used in the risk calculations because they were not present at concentrations above background levels. The individual hazard quotients for the residual COCs present above background levels (total chromium, hexavalent chromium, lead, and Aroclor-1254) are all less than 1.0 and the cumulative hazard quotient is 0.21, which is less than the 1.0 hazard quotient requirement. Hexavalent chromium and Aroclor-1254 are the only nonradionuclide carcinogenic COCs present above background levels at 100-K-29. The individual carcinogenic risks for hexavalent chromium and Aroclor-1254 are 1.14×10^{-7} and 9.40×10^{-8}, respectively. These values are below the 1×10^{-6} individual carcinogenic risk requirement. The cumulative carcinogenic risk from the 100-K-29 site is 2.08×10^{-7}. This value is less than the 1×10^{-5} cumulative risk requirement.

An additional requirement for nonradionuclides is the WAC 173-340-740(7)(e) three-part test, which is a requirement for statistically-based soil cleanup assessments. However, the three-part test is not required for 100-K-29 because a nonstatistical sampling method was used and maximum contaminant concentrations are compared against cleanup criteria to show that the cleanup standards have been met.

DATA QUALITY ASSESSMENT

A data quality assessment (DQA) was performed to compare the sample locations and the resulting field and analytical data with the sampling and data requirements specified by the project objectives and performance specifications. This review was used to determine if samples were collected in accordance with the sample design. The review also involved an evaluation of the analytical data to determine if it is the right type, quality, and quantity to support project decisions (i.e., remedial action needs, interim site closure). A DQA completes the data life cycle of planning, implementation, and assessment that was initiated by the data process.

The DQA review was performed in accordance with BHI-EE-01, *Environmental Investigations Procedures,* Procedure No. 1.22, "Data Quality Assessment." Specific data quality objectives for the site are found in the *100 Area Remedial Action Sampling and Analysis Plan* (SAP) (DOE-RL 2004a). The data quality requirements in the SAP are used for assessing data from statistical sampling and do not specifically apply to the data sets resulting from the focused sampling performed for the remaining sites. However, to ensure quality data sets, the SAP data assurance requirements are followed, where appropriate.

The data review for the 100-K-29 waste site determined that the analytical data is the right type, quality, and quantity to support site remediation decisions within specified error tolerances. All analytical data were found acceptable for decision-making purposes (BHI 2003a, 2003b, 2004c).

There were no quality assurance issues for the confirmatory soil sample results. The confirmatory samples met all holding times; the method blank results were below reporting limits; all surrogate recoveries, spike recoveries, and matrix spike recoveries were within acceptance criteria; and all the calibration standards were within acceptance criteria. Therefore, the confirmatory sample design and the resulting analytical data were sufficient to support the decision to implement a cleanup action at the 100-K-29 site.

There were also no quality assurance issues for the verification soil sample results. The verification samples met all holding times; the method blank results were below reporting limits; all surrogate recoveries, spike recoveries, and matrix spike recoveries were within acceptance criteria; and all the calibration standards were within acceptance criteria. Therefore, the verification sample design and the resulting analytical data were sufficient to support an interim site closure decision for the 100-K-29 site.

SUMMARY FOR INTERIM CLOSURE

A phased sampling approach was implemented at the 100-K-29 site based on site photographs, historical use information, suspected waste materials, and statistical information. Confirmatory sampling was conducted during April 2003. The analytical laboratory results for total chromium, lead, hexavalent chromium, and Aroclor-1254 exceeded action levels, indicating that site remediation (remove, treat, and dispose) was required. A cleanup action was implemented during December 2003, removing the sandblast media and approximately 5.1 cm (2 in.) of underlying soil from the site. Verification sampling was conducted during December 2003. The results indicated that the cleanup action achieved compliance with the remedial action objectives for direct exposure, groundwater protection, and river protection.

In accordance with this evaluation, the verification sampling results support a reclassification of the 100-K-29 site to interim closed out. The maximum detected results from underlying soil samples collected at locations suspected of having the greatest potential for contamination were shown to meet the cleanup objectives for direct exposure, groundwater protection, and river protection.

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PNNL, 2002, *Visual Sample Plan*, Version 2.0, available at http://dqo.pnl.gov/VSP, Pacific Northwest National Laboratory, Richland, Washington.

WAC 173-340, "Model Toxics Control Act -- Cleanup," *Washington Administrative Code*, 1996.

APPENDIX A

WASTE INFORMATION DATA SYSTEM GENERAL SUMMARY REPORT (2 Pages)

Waste Information Data System
General Summary Report

05/03/2004

Site Code: 100-K-29 **Site Classification: Accepted** **Page 1**

Site Names: 100-K-29, 183-KE Sandblasting Site
Site Type: Dumping Area
Status: Inactive
Operable Unit: 100-KR-2
Hanford Area: 100K

Start Date:
End Date:
Coordinates:
(E) 569328.625
(N) 146280.406
Washington State Plane

Site Description: The site surface is gravel/cobble and purple garnet. It is irregularly shaped and covers an area of ~50 yd (46 m) x 30 yd (27 m).

Location Description: Located 40-ft SW of the 183-KE Chlorine Storage Vault and just west of the 183-KE Alum Storage Tanks (126-KE-1 and -2).

References:
1. Carpenter, RW and SL Cote, 1994 100-K Area Technical Baseline Report, WHC-SD-EN-TI-239, Rev 0.
2. Kathryn Moss, 9/12/94 WIDS Site Addition: 100-K-29 (#94-305).
3. 6/19/03 Waste Site Evaluation for 100-K-29 Sandblasting Site, 0100K-CA-V0010, Rev 2.

Waste Information:

Type: Chemicals
Category: Hazardous/Dangerous
Physical State: Solid
Description: At this site in the early 1980's, steel components from the 183-KE settling basins were sandblasted prior to being sold as scrap. Sampling in 1989 indicated the material present to be nonregulated for EP Toxicity.

References:
1. Kathryn Moss, 9/12/94 WIDS Site Addition: 100-K-29 (#94-305).

Field Work:

Type: Analytical Sampling
BeginDate: 04/15/2003
End Date: 04/15/2003 **Data Repository:** HEIS
Purpose: Evaluation
Comment: Chromium VI was found in several samples to be above (up to 8.4 ppm) the Remedial Action Goals (2.1 ppm) and look-up values (2.0 ppm) established in the RDR/RAWP (DOE-RL-96-17, Rev. 4). Total chromium was a maximum of 26.1 ppm, the maximum lead value was 115 ppm, and aroclor-1254 was at a maximum level of 240 ppb. Thus, the site is recommended for additional housekeeping actions because the small amount of material is all on the surface and easily accessible.

Samples for bulk asbestos analysis were taken 4/15/2003 and reported as sample numbers J00LC1 through J00LC6. Lab Samples were reported with sample numbers of J00LC0, J00LB4 through J00LB9.

References:
1. 6/19/03 Waste Site Evaluation for 100-K-29 Sandblasting Site, 0100K-CA-V0010, Rev 2.
2. Doug Bowers, 4/15/03 Logbook EL -1578, D. Bowers page 38.

Regulatory Information:

Programmatic Responsibility

DOE Program: EM-60 **Confirmed By Program:** Yes
DOE Division: SFD - Spent Fuels Division
Responsible Contractor/Subcontractor: FH-SNFP. Fluor Hanford, Inc. - Spent Nuclear Fuels Project.

Site Code: 100-K-29 **Site Classification: Accepted** **Page 2**

Site Evaluation

Solid Waste Management Unit: Yes
TPA Waste Management Unit Type:
This site was consolidated with:

Reason:

Permitting

RCRA Part B Permit: No
RCRA Part A Permit: No
RCRA Permit Status:
Septic Permit: No
Inert LandFill: No
Air Operating Permit: No
TSD Number:
Closure Plan: No
216/218 Permit: No
NPDES: No
State Waste Discharge Permit: No

Tri-Party Agreement

Lead Regulatory Agency: EPA
Unit Category: CERCLA Past Practice (CPP)
TPA Appendix: C

Remediation and Closure

Decision Document: Interim Action Record of Decision, 100 Area Remaining Sites (1999)
Decision Document Status: Final
Remediation Design Group Group 5
Closure Document:
Closure Type:
Post Closure Requirements:
Residual Waste:

Images:

Pathname: \\apwids01\widsimg\100K\1704\1704_01.JPG DateTaken:
Description:

Pathname: \\apwids01\widsimg\100K\1704\1704_02.JPG DateTaken:
Description: The site is indicated by the red sandy area.

Pathname: \\apwids01\widsimg\100K\1704\1704_03.JPG DateTaken:
Description:

APPENDIX B

100-K-29 SITE SAMPLE RESULTS
(3 Pages)

Table B-1. 100-K-29 Confirmatory Sampling Data Summary.

Sample Area and Depth BGS	HEIS Number	Sample Date	Arsenic			Barium			Cadmium			Chromium			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 Garnet (1/16 to 1/8" bgs)	J00LB4	04/15/03	0.43		0.33	5		0.009	0.11		0.04	2		0.06	0.4	U	0.4
Area 1 (6 to 8" bgs)	J00LB5	04/15/03	2.3		0.37	66.4		0.01	0.04	U	0.04	7		0.06	0.43	U	0.43
Area 2 (0 to 3" bgs)	J00LB6	04/15/03	1.4		0.35	43.7		0.01	0.07		0.04	9.3		0.06	0.87		0.42
Area 3a (0 to 3" bgs)	J00LB7	04/15/03	1.7		0.27	49.5		0.008	0.33		0.03	26.1		0.05	8.4		0.42
Area 3b (0 to 3" bgs)	J00LB8	04/15/03	1.5		0.32	50.7		0.009	0.25		0.04	18.9		0.06	4.7		0.42
Duplicate of J00LB5	J00LB9	04/15/03	1.3		0.31	54.1		0.009	0.13		0.03	11.6		0.05	3.2		0.42
Equipment Blank of J00LB5	J00LC0	04/15/03	0.36	U	0.36	0.94		0.01	0.04	U	0.04	0.13		0.06			

Sample Area and Depth BGS	HEIS Number	Sample Date	Lead			Mercury			Selenium			Silver		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 Garnet (1/16 to 1/8" bgs)	J00LB4	04/15/03	3.2		0.24	0.02	U	0.02	0.34	U	0.34	0.07	U	0.07
Area 1 (6 to 8" bgs)	J00LB5	04/15/03	6.7		0.27	0.03		0.02	0.38	U	0.38	0.08	U	0.08
Area 2 (0 to 3" bgs)	J00LB6	04/15/03	29.8		0.26	0.03		0.02	0.36	U	0.36	0.08	U	0.08
Area 3a (0 to 3" bgs)	J00LB7	04/15/03	115		0.20	0.02	U	0.02	0.28	U	0.28	0.06	U	0.06
Area 3b (0 to 3" bgs)	J00LB8	04/15/03	72.4		0.24	0.02	U	0.02	0.33	U	0.33	0.07	U	0.07
Duplicate of J00LB5	J00LB9	04/15/03	34.3		0.23	0.05		0.02	0.32	U	0.32	0.07	U	0.07
Equipment Blank of J00LB5	J00LC0	04/15/03	0.27	U	0.27	0.02	U	0.02	0.37	U	0.37	0.08	U	0.08

Table B-1. 100-K-29 Confirmatory Sampling Data Summary (continued).

Constituent	J00LB4 Area 1 Garnet Sample Date 4/15/03			J00LB5 Area 1 (6 to 8" bgs) Sample Date 4/15/03			J00LB6 Area 2 (0 to 3" bgs) Sample Date 4/15/03			J00LB7 Area 3a (0 to 3" bgs) Sample Date 4/15/03		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	34	U	34	35	U	35	35	U	35	35	U	35
Aroclor-1221	67	U	67	71	U	71	71	U	71	70	U	70
Aroclor-1232	34	U	34	35	U	35	35	U	35	35	U	35
Aroclor-1242	34	U	34	35	U	35	35	U	35	35	U	35
Aroclor-1248	34	U	34	35	U	35	35	U	35	35	U	35
Aroclor-1254	34	U	34	35	U	35	120		35	110		35
Aroclor-1260	34	U	34	35	U	35	35	U	35	35	U	35

Constituent	J00LB8 Area 3b (0 to 3" bgs) Sample Date 4/15/03			J00LB9 Duplicate of J00LB5		
	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	35	U	35	35	U	35
Aroclor-1221	70	U	70	70	U	70
Aroclor-1232	35	U	35	35	U	35
Aroclor-1242	35	U	35	35	U	35
Aroclor-1248	35	U	35	35	U	35
Aroclor-1254	240		35	98		35
Aroclor-1260	35	U	35	35	U	35

BGS = below ground surface
HEIS = Hanford Environmental Information Syst
J = estimate
PQL = practical quantitation limit
Q = qualifier
SVOA = semivolatile organic analyses
U = undetected

100-K-29 Asbestos Data (Sample Date 4/15/03)

Sample Area	HEIS Number	Asbestos
Area 1 Garnet	J00LC1	No asbestos found.
Area 1 (6 to 8" bgs)	J00LC2	No asbestos found.
Area 2 (0 to 3" bgs)	J00LC3	No asbestos found.
Area 3a (0 to 3" bgs)	J00LC4	No asbestos found.
Area 3b (0 to 3" bgs)	J00LC5	No asbestos found.
Duplicate of J00LC3	J00LC6	No asbestos found.

Table B-2. 100-K-29 Verification Sampling Data Summary.

Sample Area	HEIS Number	Sample Date	Chromium			Lead			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 2 (6" bgs)	J015N8	12/12/03	8.5		0.07	13.9		0.31	0.22	U	0.22
Area 3a (6" bgs)	J015N9	12/12/03	12.6		0.07	8.5		0.29	0.24		0.22
Area 3b (6" bgs)	J015P0	12/12/03	24.7		0.07	63.2		0.3	0.22	U	0.22

100-K-29 Aroclor Data

Constituent	J015N8 Area 2 (6" bgs) Sample Data 12/12/03			J015N9 Area 3a (6" bgs) Sample Data 12/12/03			J015P0 Area 3b (6" bgs) Sample Data 12/12/03		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Aroclor-1016	15	U	15	15	U	15	14	U	14
Aroclor-1221	15	U	15	15	U	15	14	U	14
Aroclor-1232	15	U	15	15	U	15	14	U	14
Aroclor-1242	15	U	15	15	U	15	14	U	14
Aroclor-1248	15	U	15	15	U	15	14	U	14
Aroclor-1254	47		15	15	U	15	31		14
Aroclor-1260	15	U	15	15	U	15	14	U	14